

REMARKS

In the Final Office Action, the Examiner rejected claims 1-5, 10-14, 21 and 24-29. By this Response, Applicants have amended claims 1 and 25 and added new claims 99-145. These amendments do not add any new matter. Upon entry of these amendments, claims 1-5, 10-14, 21, 24-29 and 99-145 will be pending in the present application and are believed to be in condition for allowance. In view of the foregoing amendments and the following remarks, Applicants respectfully request reconsideration and allowance of all pending claims.

Claim Rejections Under 35 U.S.C. § 102(b)

In the Final Office Action, the Examiner rejected claims 1-5, 10, 12, 14, 21 and 24-29 under 35 U.S.C. § 102(b) as being anticipated by Weaver et al., U.S. Patent No. 4,532,052 (hereinafter “the Weaver reference”). Applicants respectfully traverse this rejection.

Legal Precedent

Anticipation under section 102 can be found only if a single reference shows exactly what is claimed. *See Titanium Metals Corp. v. Banner*, 227 U.S.P.Q. 773 (Fed. Cir.1985). For a prior art reference to anticipate under section 102, every element of the claimed invention must be identically shown in a single reference. *See In re Bond*, 15 U.S.P.Q.2d 1566 (Fed. Cir.1990).

Deficiencies of the Weaver Reference

Turning to the claims, independent claim 1 recites as follows:

introducing a water-soluble relative permeability modifier comprising a hydrophobically modified water-soluble polymer into a subterranean formation zone having a permeability to aqueous-based fluids so that *the hydrophobically modified water-soluble polymer reduces the permeability of the subterranean formation zone to aqueous-based fluids*; and

injecting an aqueous injection fluid into the subterranean formation zone after introducing the water-soluble relative permeability modifier so that *the hydrophobically modified water-soluble polymer present in the subterranean*

*formation zone diverts the aqueous injection fluid to another
subterranean formation zone.*

(Emphasis added.)

Applicants respectfully submit that the Weaver reference does not teach or suggest “injecting an aqueous injection fluid into the subterranean formation zone after introducing the water-soluble relative permeability modifier so that *the hydrophobically modified water-soluble polymer present in the subterranean formation zone diverts the aqueous injection fluid to another subterranean formation zone,*” as recited by independent claim 1. (Emphasis added.) Rather, the Weaver reference discloses a variety of different branched polymers with varying functionality based on the particular branched polymer selected. Weaver, col. 5, lines 21-60. Indeed, the Weaver reference specifically discloses:

The production of various polymer classes to accomplish the desired modification; produce the desired attracting, repelling, or suspending properties; and produce the desired viscosifying, gelling or preference for organic or aqueous liquids can be prepared in view of the disclosure herein.

Id. col. 7, lines 57-62. Certain of these branched polymers may contain units, segments, or portions that are oleophilic, oleophobic, hydrophilic, hydrophobic, or combinations thereof. *Id.* col. 5, lines 55-58. One specific class of branched polymers disclosed are branched polymers containing a hydrophobic modifying portion. *Id.* col. 7, lines 43-47.

In sharp contrast to the present claims, however, the Weaver reference discloses that branched polymers containing the hydrophobic modifying portion function to increase water permeability. *See* Weaver, col. 7, lines 43-52. In relevant part, the Weaver reference describes such branched polymers as follows:

In yet another aspect of the invention, another class of polymers can be prepared which have some *hydrophobic and/or oleophilic portions, branches or overall natures* so that these polymers can be attached to formations or suspended within fluids in the formation to produce a surface effect on the particles or formation which retards the flow of organic fluids or hydrocarbon fluids and *increases the permeability of the formation to aqueous fluids.*

Id. (emphasis added.) As such, the Weaver reference discloses that the branched polymers containing the hydrophobic modifying portion increase the formation's permeability to aqueous fluids, and thus the Weaver reference does not disclose "that *the hydrophobically modified water-soluble polymer present in the subterranean formation zone diverts the aqueous injection fluid to another subterranean formation zone,*" as recited by independent claim 1. (Emphasis added.)

In further support of this conclusion, Applicants direct the Examiner's attention to the Table provided in column 10 of the Weaver reference entitled "Characteristics of Branched Polymers." In this table, the branched polymers containing hydrophobic modifying portions are indicated as having the function of increasing water permeability. Applicants additionally note that this table also indicates that the branched polymers containing hydrophobic modifying portions are soluble in organic solvents rather than in aqueous fluids. This is in further contrast to Applicants' independent claim 1 which recites "hydrophobically modified *water-soluble* polymers." (Emphasis added.) Accordingly, the Weaver reference does not disclose each and every recitation of independent claim 1.

In addition, to the extent that the Weaver reference disclose the use of the branched polymers to reduce the flow of aqueous fluids, Applicants respectfully submit that the Weaver reference does not disclose that the branched polymers containing the hydrophobic modifying portions function to reduce the flow of aqueous fluids. Rather, as discussed above, the only disclosure of the branched polymers containing hydrophobic modifying portions is for *increasing* the flow of aqueous fluids. With respect to reduced flow of aqueous fluids, the Weaver reference consistently discloses that a branched polymer containing hydrophilic branching should reduce the formation's water permeability. Weaver, col. 10, lines 3-25; col. 15, lines 63-66; col. 19, lines 13-17. Indeed, the Weaver reference describes a preferred branched polymer, as follows: "For one preferred class of polymers *used to reduce the flow of water* through earthen formations or to reduce the production of water in an oil well, *the branched chain and overall polymer should be hydrophilic.*" *Id.* col. 19, lines 13-17 (emphasis added). Therefore, the Weaver reference does not disclose "that *the hydrophobically modified water-soluble polymer present in the subterranean formation zone*

diverts the aqueous injection fluid to another subterranean formation zone,” as recited by independent claim 1. (Emphasis added.)

To the extent that the Examiner continues to assert that the recitation of an intended use must result in a structural difference between the claimed invention and the prior art, Applicants note that independent claim 1 has been amended to recite the use of the hydrophobically modified water-soluble polymer to modify the water permeability of a subterranean formation. Specifically, independent claim 1 recites that the *“the hydrophobically modified water-soluble polymer reduces the permeability of the subterranean formation zone to aqueous-based fluids.”* (Emphasis added.) Moreover, independent claim 1 has also been amended to recite that the hydrophobically modified water-soluble polymer present in the formation diverts an aqueous injection fluid, in that claim 1 recites that *“the hydrophobically modified water-soluble polymer present in the subterranean formation zone diverts the aqueous injection fluid to another subterranean formation zone.”* (Emphasis added.) As discussed above, the Weaver reference however does not disclose the use of hydrophobically modified polymers for reducing a formation’s water permeability. As such, whether or not the branched polymers that contain the hydrophobic modifying portion disclosed by the Weaver reference would be capable of reducing the permeability of a formation to aqueous fluids, the Weaver reference does not disclose or suggest the use of such branched polymers to divert aqueous injection fluids. Rather, the Weaver reference discloses that such branched polymers would increase water permeability. Weaver, col. 7, lines 43-52. The Weaver reference, therefore, does not teach or suggest each and every recitation of independent claim 1 and its dependent claims.

For at least the foregoing reasons, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. § 102(b) with respect to the Weaver reference.

Claim Rejections Under 35 U.S.C. § 103(a)

In the Office Action, the Examiner rejected claims 11-14 under 35 U.S.C. § 103(a) as being unpatentable over the Weaver reference and Waggenpack et al., U.S. Patent No. 6,358,889 (hereafter referred to as “the Waggenpack reference”). Applicants respectfully traverse this rejection. Claims 11-14 are each dependent on independent claim 1. Thus, each

of the claims rejected under 35 U.S.C. § 103 depends from a claim rejected under 35 U.S.C. § 102, based on the Weaver reference. As discussed above, the Weaver reference does not disclose or suggest each and every feature of independent claim 1. It should be noted that the Waggenspack reference does not remedy these deficiencies of the Weaver reference. As such, none of the references taken alone or in combination, can render the recited subject matter obvious. Accordingly, Applicants respectfully request that the Examiner withdraw each of the rejections under 35 U.S.C. § 103.

Remarks Regarding New Claims

As set forth above, Applicants have added new claims 99-145. In accordance with the Examiner's election requirement of March 23, 2006, Applicants indicate claims 99, 106-111, 116-120, 123-132, 137-141 and 144-145 as readable upon the elected species. Moreover, for the reasons discussed above and other claim features, Applicants believe that these claims are patentable over the cited references and in condition for allowance. Therefore, Applicants request that the Examiner allow the new claims 99-145.

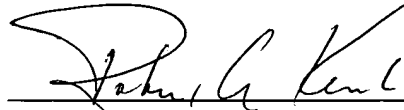
Payment of Fees and Authorization for Extensions of Time

Applicants have authorized the Commissioner to charge the requisite fee for the RCE (\$790.00) to Deposit Account 08-0300, Order No. 2003-IP-009464U1. If any additional fees, including fees for extensions of time and other reasons, are deemed necessary to advance prosecution of the present application, at this or any other time, Applicants hereby authorize the Commissioner to charge such requisite fees to Deposit Account No. 08-0300; Order No. 2003-IP-009464U1. In accordance with 37 C.F.R. § 1.136, Applicants hereby provide a general authorization to treat this and any future reply requiring an extension of time as incorporating a request thereof.

Conclusion

Applicants respectfully submit that all pending claims are in condition for allowance. However, if the Examiner wishes to resolve any other issues by way of a telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,



Date: December 11, 2006

Robert A. Kent
Reg. No. 28,626
Halliburton Energy Services
2600 South Second Street
P.O. Drawer 1431
Duncan, Oklahoma 73536-0440
Telephone: (580) 251-3125